

## **BRACKET FOR SUPPORTING ARTICLES ON A WALL**

This application claims priority under 35 U.S.C.119 from United States Provisional Application Serial No. 60/433,503 filed December 16, 2002.

This invention relates to a bracket for attachment of articles to a wall.

5               Many different designs of brackets are available for many different functions including supporting shelving and other articles. However in recent times, many new neighbourhoods are built on extremely narrow lots. Consequently garages are as narrow as possible. This makes the task of hanging tools that much more challenging since one wants as much horizontal space as possible. It is not  
10              uncommon to have only 12 to 18 inches of space between a car door and the side of the garage. There remains therefore a requirement for a bracket which is particularly designed for use with garage walls formed of open studs and exterior sheathing, but which may be used in other circumstances where its particular connections and mounting are convenient.

### **15           SUMMARY OF THE INVENTION**

It is one object of the invention to provide a bracket for supporting articles on a wall.

According to one aspect of the invention there is provided a bracket comprising:

20              a bracket body having a fastening portion, an extending portion extending from the fastening portion so as to be cantilevered therefrom and an article support portion at an end of the extending portion;

the extending portion defining a plane along one side of the bracket

body for lying against a surface;

the fastening portion having fastener receiving holes defined in the bracket body by which a fastener can be inserted along an axis of a respective one of the holes for holding a surface of the bracket body against a support surface for  
5 mounting the bracket body on the support surface;

the fastening portion having a first set of holes arranged with the axis thereof generally at right angles to the plane for fastening said one side of the bracket body against the mounting surface and having a second set of holes arranged with the axis thereof generally parallel to the plane for fastening a surface  
10 of the bracket body which lies at right angles to said one side of the bracket body against the mounting surface.

This aspect of the invention allows the structure to provide different modes of mounting allowing the bracket to be used for different purposes associated with a stud and sheathing wall.

15 Preferably for allowing use with different article support members suitable for different types of articles and different orientations, the article support portion comprises a receptacle for receiving a separate article support member. However the bracket itself may be formed with the article support member directly attached as an integral piece.

20 In one convenient arrangement, the receptacle comprises a cylindrical sleeve into which a shaft of the article support member can be inserted. Such article support members are commercially available with the shaft being generic for attachment to a suitable support receptacle and the end of the shaft being

specifically designed in respect of the article to be supported. Thus suitable article supports can comprise a Y-shaped portion for a T-shaped handle for example of a spade, a hook, or an arm. Many other shapes will be well known to one skilled in the art and can be adapted fro use with the bracket of the present invention.

5 Preferably and importantly, as described in more detail hereinafter, the receptacle is arranged such that the article support member extends from the bracket body to a side opposite to the plane. In this way with the plane against a wall surface, the article is carried on the bracket on a side opposite to the wall.

Preferably the bracket body has a generally planar end wall at right  
10 angles to the plane and generally at right angles to a length of the extension portion and wherein the second set of holes extends through the end wall for fastening the end wall to a suitable support surface such as a wall stud. The term "end wall" is not intended to require a completely flat or planar wall structure since it will be appreciated that the wall can be formed by a plurality of separate wall portions or  
15 contact points and the material forming the bracket body in between the contact points can be omitted depending upon strength requirements. Thus a "wall" or "surface" does not need to be complete and un-broken but can be formed up of separate pieces which together lie in a common plane for contacting and abutting the surface to which they are intended to be attached.

20 In one preferred construction, the bracket is formed by injection molding from a suitable plastics material and includes a stiffening center wall parallel to the plane and connecting to the end wall at a center thereof and wherein the second set of holes includes, for symmetry and for use with both "handedness", a

first pair on one side of the center wall and a second pair on an opposed side of the center wall. In this arrangement, each pair of holes is preferably inclined at an angle to the center wall so that the fastener is inclined to the center wall allowing it to be driven by a tool at an angle to the center wall.

5           In order that the fastening portion can be mounted on the side of a 2X6 or 2X4 stud, preferably the first set of holes are all arranged so that they are located within four inches of the end wall. Also the first set of holes includes at least one hole adjacent the end wall and at least one hole spaced outwardly from the end wall by a greater distance.

10          Preferably the body includes a generally planar first side surface extending along the extending portion from the fastening portion to the article support portion at right angles to the end wall which can be used as a top surface at right angles to the vertical surface to which the end wall is fastened and defining a support surface for a planar shelf member.

15          Also the body preferably includes a second side surface opposite to the first side surface also extending along the extending portion from the fastening portion to the article support portion which is shaped in the plane to define a concave section, allowing the bracket to be inverted and used with the second surface uppermost. The concave portion may thus be recessed from the article  
20 support portion such that the article support portion projects outward toward said opposite side beyond said second side. The article support portion may comprise an cylindrical sleeve having an axis at right angles to the plane.

According to a second aspect of the invention there is provided a

bracket comprising:

a bracket body having a fastening portion, an extending portion extending from the fastening portion so as to be cantilevered therefrom and an article support portion at an end of the extending portion;

5                   the extending portion defining a plane along one side of the bracket body for lying against a surface;

                      wherein the bracket body has a generally planar end wall at the fastening portion at right angles to the plane and generally at right angles to a length of the extension portion;

10                  the end wall having fastener receiving holes by which a fastener can be inserted along an axis of a respective one of the holes for holding the end wall of the bracket body against a support surface for mounting the bracket body on the support surface with the plane against an abutment surface at right angles to the support surface;

15                  wherein the article support portion is arranged such that an article carried thereby is located on a face of the bracket body opposite to said abutment surface.

                      This aspect of the invention allows the structure to fit between wall studs, and, by doing so, creating more unencumbered width in a garage. The  
20 primary purpose of this aspect of the bracket disclosed herein is to reduce the amount of space required to hang items, such as shovels and garden tools.

                      The bracket may make garages a safer place for people of all ages. It also has applicability to areas other than a garage.

The bracket is preferably designed to work in conjunction with pre-existing hooks commonly found on the market. Alternatively the bracket may incorporate its own hook portion as an integral or attachable part so that the bracket provides not only the attachment to the wall but also the hook itself.

- 5           The bracket aims at freeing up space by having the tool rest between the studs, saving the individual approximately 4 inches of width. In addition the bracket hides the tools between the studs and is much safer given that shovel edges and garden hoes are now recessed and protected by the studs themselves and not exposed as conventional hanging kits do.

10    BRIEF DESCRIPTION OF THE DRAWINGS

One embodiment of the invention will now be described in conjunction with the accompanying drawings in which:

Figure 1 is a front elevational view of one embodiment of the invention.

Figure 2 is a top plan view of the embodiment of Figure 1.

- 15       Figure 3 is an isometric view of the embodiment of Figure 1.

Figure 4 is a top plan view similar to that of Figure 2 showing the bracket attached between the studs of a wall with an article support member carried thereby.

- Figure 5 is a front elevational view similar to that of Figure 1 showing  
20   the bracket attached to one stud of a wall with shelf and a closet rod carried thereby.

In the drawings like characters of reference indicate corresponding parts in the different figures.

DETAILED DESCRIPTION

A bracket 10 is moulded from a plastics material to define an integral bracket body 11. The structure is preferably injection moulded so as to provide the structure with sufficient strength at an integral element when suitable stiffening 5 members so as to allow the bracket to provide the necessary support for the functions as discussed hereinafter.

The bracket is moulded to define a center plate which lies in a center plane of the bracket spaced from two side planes 13 and 14 of the bracket. The planes 13 and 14 are parallel with the plate 12 having a thickness significantly less 10 than the width between the planes 13 and 14 located midway therebetween.

The bracket further includes a plurality of ribs and walls formed at right angles to the plate and extending across the width of the bracket from one surface 13 to the opposite surface 14. The ribs and walls interconnect to provide the structure of the bracket and to define the peripheral surface of the bracket.

15 Thus the bracket is defined by a first side wall 15 and a second side wall 16 each of which extends substantially along the full length of the bracket. The bracket further includes an end wall 17 at an inner end of the bracket at an end wall 18 at an opposite end of the bracket. The end walls 17 and 18 are parallel and at right angles to one side wall 15.

20 Joining the side walls 15 and 16 is provided a plurality of spaced ribs 19, 20 and 21 which are parallel to the end walls 17 and 18 and substantially equidistantly spaced. Thus an area is formed between the end wall 17 and the transverse rib 19 and between the side walls 15 and 16 as indicated at 22. This

area contains a portion of the plate 12 as indicated at 12A. A hole 12B may be provided in the plate portion 12A centrally of the area so as to reduce the mass of the structure without significantly reducing the strength. The sides of the hole are generally parallel to the adjacent wall so as to leave a rib outside the hole and  
5 connected to the respective wall. Similarly areas 12C, 12D and 12E are formed between respective ones of the transverse walls 19, 20 and 21 and the end wall 18.

The side wall 15 lies at right angles to the central plate 12 so that it forms a flat surface of the end wall 15 at right angles to the plate 12.

The side wall 16 lies not at right angles to the end wall 17 but instead  
10 includes a first portion 25 extending from the end wall 17 outwardly to a concave area 26 and a second portion 27 which extends from the concave section 26 to the end wall 18. This portion 27 is smoothly curved from the concave section 26 around a convex semi circular portion 28 smoothly interconnecting with the end wall 18.

The semi circular portion 28 forms a part of a cylindrical wall 29  
15 defined within the area 12E. Thus the cylindrical wall 29 extends through the thickness of the bracket from the surface 13 to the surface 14.

It will be appreciated that the surfaces 13 and 14 are not complete but are formed by the side edges of the wall 15, 16, 17 and 18 and by the side edges of the transverse ribs 19, 20 and 21.

20 At the junction between the end wall 17 and the adjacent part of the side wall 16 is provided a thickened corner piece 29 which contains a formed cylindrical hole 30 extending therethrough through the thickness of the bracket from the surface 13 to the surface 14. Symmetrically a thickened portion 31 is formed at

a junction between the end wall 17 and the side wall 15. This also contains a hole  
32. Yet further similar holes and thickened portions indicated at 33 and 34  
respectively are provided at the junctions between the transverse rib 19, the side  
wall 15 and the side wall 16. This therefore provides four available screw fastener  
5 holes two located at the end wall and two located at the transverse rib 19.

Yet further an additional thickened section and hole is provided as  
indicated at 35 located at the junction between the transverse rib 21 and the sidewall  
16 at the concave section 26.

The side wall 16 thus forms the first portion 25 which is inclined at an  
10 angle of the order of 20° outwardly from the end wall 17 and toward the side wall 15  
to a minimum spacing from the side wall 15 at the concave section 26 at the rib 21.  
The second section of the side wall 27 then extends away from the side wall 15 to  
form a maximum spacing slightly less than the width of the end wall 17 at the top of  
the cylindrical wall 28.

15 Further mounting screw holes are provided through the end wall 17 as  
indicated at 40. The screw holes are arranged at spaced positions along the length  
of the end wall 17. Two holes are arranged on one side of the central plate 12 and  
two holes are arranged on the opposite side of the central plate 12. In this way two  
holes can be accessed from one side of the central plate and two holes can be  
20 accessed from the opposite side of the central plate. This allows the bracket to be  
used in either hand with either the surface 13 or the surface 14 inaccessible by  
being placed against a suitable support surface. When one of the surfaces is  
inaccessible, therefore, two screw holes are available on the opposite side of the

center plate 12. The holes are inclined so that the axis of each hole is inclined away from the central plate 12 at an angle of the order of 20 to 30° allowing a screw fastener to be inserted through the hole and for the screw driver to be arranged at a position spaced from the central plate 12 and at an angle to the central plate 12

5 allowing the screw to be driven through the respective hole 40 into a surface contacting the outside surface of the end wall 17. Thus as best shown in Figure 3 the holes 40 are provided in angled surfaces 41 which stand out from the end wall 17 and lie at right angles to the axis of the respective hole. This acts to thicken the end wall 17 at the respective screw hole and provides the surfaces for receiving the

10 screw head which lies at right angles to the axis of the screw so that the screw head can be pulled down tight onto the surface 41 to hold the flat surface of the end wall 17 against a suitable support surface even though the screw fastener does not penetrate the support surface at right angles to the support surface.

The bracket is therefore designed and arranged to be used in a

15 number of different modes.

The first of the modes is shown in Figure 4 where the bracket is used in a stud wall 50 defined by a plurality of spaced studs 51 fastened to an exterior sheathing 52. The studs may be of 2x4 dimensions or 2x6 dimensions as is conventionally used or other dimensions which may be used in unusual

20 circumstances.

In this arrangement the bracket is used to locate and support a hanging article between the studs 51 so that the article is moved as close as possible to the sheathing 52. In this mode, the bracket is arranged so that one of

the surfaces 13 or 14 is pressed against the inside surface 53 of the sheathing 52. In the arrangement as shown, the surface 14 is located in contact with the surface 53 although it will be appreciated that the bracket is symmetrical and therefore could be reversed if desired.

5                 With the surface 14 abutting the surface 53 the end wall 17 is moved into contact with an inwardly facing surface of a respective one of the studs 51 and is fastened thereto by screw fasteners schematically indicated at 55 which pass along an insertion line 56 through a respective one of the holes 40 into the inwardly facing surface of the stud 51. Thus the bracket is attached to the stud 51 by two  
10 screw fasteners on the outwardly facing side of the center plate 12 at the top and bottom of the end wall 17.

The length of the bracket from the end wall 17 to the cylindrical support wall 29 is arranged to be approximately half the width between the studs 51 so as to locate the cylindrical wall 29 adjacent the mid point of the studs.

15                 The cylindrical wall 29 provides a cylindrical support for receiving a shaft 60 of a hanging bracket 61. Various styles of hanging member are available each with a shaft 60 which can be inserted into a respective one of the brackets. The shaft 60 thus projects from the interior of the cylindrical wall 29 outwardly to the side of the bracket at the surface 13 that is away from the sheathing 52 thus holding  
20 the hanging member 61 in front of the bracket 10 adjacent the surface 13 and between the studs 51. Various types of hanging member can be used and one example is a Y shaped member which can receive the T handle of a spade or the like located in the recess between the legs of the Y shape.

Other types of hanging member can be used including hooks of various lengths and dimensions, rods of various lengths and others well known to one skilled in the art. Each hanging member needs only to have a shaft 60 matching the dimensions of the cylindrical receptacle 29 to be received in place and held in 5 location between the studs 51. As the bracket is relatively narrow it holes the hanging member 61 closely adjacent the sheathing 53 allowing the supported article to be moved as close as possible to the sheathing 53 and preferably within the area defined by the studs 51.

A second mode of operation of the bracket is shown in Figure 5 which 10 is used with a wall structure 50 as previously described including studs 51 and sheathing 52. In this arrangement the bracket is turned through 90° so that the end wall butts against the inside surface of the sheathing and one surface 13 or 14 is located adjacent the inside surface of one of the studs 51. In this position the bracket is fastened to the side of the stud 51 by inserting screws through the holes 15 30, 32, 33 and 34. The holes 30 and 32 are located immediately adjacent the sheathing and therefore provide engagement with the stud at the position adjacent the sheathing. The holes 34 and 33 are located at a position on the stud spaced outwardly from the sheathing and therefore provide a cantilever support for supporting the end wall 18 and the cylindrical receptacle 29 spaced outwardly from 20 the stud and from the sheathing. The holes located at distance which is of the order of 3" from the end wall through all of the holes 30, 32, 33 and 34 are located within the dimensions of a 2x4 stud and therefore within the dimensions of a 2x6 stud. The holes 33 and 34 are spaced outwardly by a distance of the order of 3" which allows

the screw holes to be close to the outer edge of the stud but not so far that the screws cannot be engaged into the stud without damaging the stud. Thus the bracket allows the cantilever support of the outer end of the bracket from the stud.

In the mode shown in Figure 5, the side wall 15 is uppermost and this  
5 side wall therefore lies at right angles to the sheathing and defines a horizontal flat  
surface which can receive a shelf S. The shelf S can extend slightly beyond the end  
wall 18 in conventional manner.

In addition or as an alternative, a closet rail R can be inserted through  
the cylindrical sleeve receptacle 29 to be supported thereby. In both cases it will be  
10 appreciated that a second one of the brackets located at another of the studs carries  
the other end of the shelf and/or the other end of the closet rail. If there is sufficient  
length, more than two brackets can be used for supporting the shelf and/or the  
closet rail.

In a further mode of operation of the bracket (not shown) the bracket is  
15 simply inverted from a position shown in Figure 5 so that the side wall 16 is to the  
top and the side wall 15 is to the bottom. In this orientation the bracket can be used  
to receive simply a closet rail R. However in addition the concave section 26 allows  
an elongate member to be draped over the concave section 26 of two spaced  
brackets. Any such elongate member can be supported such as the cross bar or  
20 bicycle, a fishing rod or the handle of an implement with the elongate member  
resting conveniently within the concave section 26 and held against rolling from the  
bracket by the raised section of the cylindrical sleeve 29.

In a yet further mode of operation of the bracket, the bracket can be placed with the end wall against the surface of the stud which is spaced from the sheathing thus moving the bracket outwardly from the sheathing by the depth of the stud 51. This holds the bracket at a position spaced further from the sheathing thus  
5 increasing the length of the bracket which extends from the inner edge of the stud and thus increases the width of the bracket which is available to receive a shelf, thus increasing the width of the shelf which can be supported.

Symmetrically, the bracket can be used in this mode in the inverted position for supporting a closet rail and/or an elongate article on the surface 16 but  
10 spaced further out from the sheathing. Yet further, the bracket can be used with the end wall 17 against the flat face of a wall rather than on the inside surface of an exposed stud.

Thus the bracket has the advantage that it can be used in a number of different modes and includes the mounting arrangement provided by the end wall 17  
15 with its screw holes 40 for mounting in one mode and also provides the screw holes 30, 32, 33 and 34 at right angles to the end wall for mounting the bracket on the side of the stud.

Yet further the bracket provides the advantage that it can be used in the mode where one side of the bracket is located against the sheathing with the  
20 cylindrical sleeve receptacle acting to support a hanging bracket extending away from the sheath.

The hole 35 can be used in the first mode above to fasten the bracket to the sheathing so as to provide additional support to the outer end of the bracket to reduce the cantilever.

As previously stated, the bracket is designed primarily as a space saving device for tools one would find in a garage as this is the most common place one would find uncovered wall studs. Having said this, the bracket can be used in any area where one wants to hang an item primarily but not exclusively within a recessed cavity:

To hold up bikes when used upside down;

10 To store articles between wall studs when turned 90 degrees;

To use as a regular shelf bracket on finished walls, giving for example a 9" bracket accommodating up to a 12" shelf;

To use as a recessed bracket between wall studs, giving for example a 6.5" inch bracket and accommodating up to an 8" shelf;

15 To hold up miscellaneous articles such as lawn chairs when used upside down, that is with the concave side uppermost;

To hold up miscellaneous elongate articles when used in pairs upside down (example, fishing rods, hockey sticks or even an angle shelf);

20 To be hung vertically from basement rafters along with a closet rod passing through the sleeve shaped receptacle, to be used as a clothes rod;

To be used in conjunction with the shelf installations along with a closet rod to hang hockey equipment or other clothing articles.

Since various modifications can be made in my invention as herein

above described, and many apparently widely different embodiments of same made within the spirit and scope of the claims without departure from such spirit and scope, it is intended that all matter contained in the accompanying specification shall be interpreted as illustrative only and not in a limiting sense.